

METRIC

MIL-PRF-85045/16B
16 September 1999
SUPERSEDING
MIL-C-85045/16A
26 May 1995

PERFORMANCE SPECIFICATION SHEET

CABLE, FIBER OPTIC, ONE FIBER, CABLE CONFIGURATION TYPE 1 (BUFFERED FIBER),
TIGHT BUFFER, CABLE CLASS SM AND MM, (METRIC)

This specification is approved for use by all Departments and Agencies
of the Department of Defense.

The requirements for acquiring the product described herein shall consist
of this specification and MIL-PRF-85045.

CLASSIFICATION:

Fiber optic cable configuration type: 1 (Buffered fiber).

Fiber cable class: MM (Graded-index, glass core and glass cladding, multimode).
SM (Dispersion-unshifted, glass core and glass cladding,
single-mode).

DESIGN AND CONSTRUCTION:

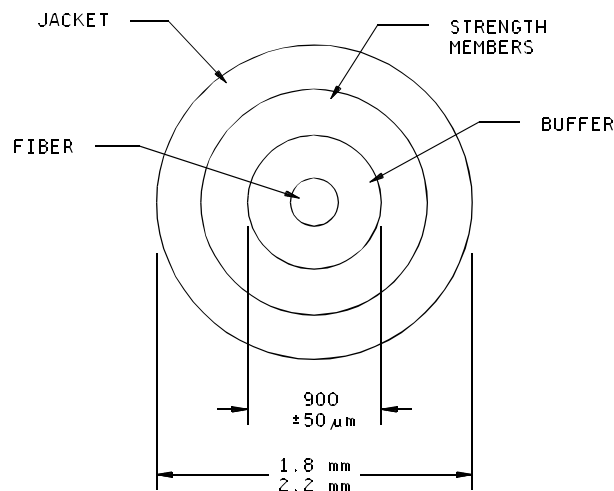
Fiber:

Class MM fibers shall be in accordance with MIL-PRF-49291/6.
Class SM fibers shall be in accordance with MIL-PRF-49291/7.

Buffer diameter: $900 \pm 50 \mu\text{m}$.

Finished cable:

Dimensions and configuration: See figure 1.



NOTE:

1. Dimensions are in millimeters.

FIGURE 1. Tight buffered single fiber optical cable.

Mass per unit length: ≤ 15 kg/km.

Color: Slate for class MM fiber. Yellow for class SM fiber.

Jacket material: The jacket shall be composed of a low halogen, low smoke, low toxicity polymer material.

Number of fibers: 1.

Concentricity: ≥ 0.8 .

Short term minimum bend diameter: Eight times the cable outer diameter. (The short term minimum bend diameter is to be used in all environmental and mechanical tests which specify a cable minimum bend diameter.)

Long term minimum bend diameter: Sixteen times the cable outer diameter.

Minimum continuous length: The minimum continuous length of all cables shall be not less than 0.5 km. If lengths less than 0.5 km are specified in the purchase order, Quality Conformance Inspection shall be performed on test specimens not less than 0.5 km in length from which the purchase order lengths are cut.

PERFORMANCE REQUIREMENTS:

Optical Properties:

Maximum attenuation rate: 4.5 dB/km at 850 ± 20 nm, 2.0 dB/km at 1300 ± 20 nm for class MM fiber.
1.0 dB/km at 1310 ± 20 nm and 1550 ± 20 nm for class SM fiber.

Bandwidth: Fiber with a minimum bandwidth of 500 Mhz-km at 1300 nm shall be used (multimode cables only).
Bandwidth is not specified at 850 nm.

Change in optical transmittance: Measurements to be made at 1300 ± 20 nm.

Crosstalk: Not applicable.

Mechanical properties:

Tensile loading and elongation: Applicable, tensile loading ≥ 270 N.

Operating tensile loading: Applicable.

Dynamic bend: The tensile load shall be not less than 90 N.

Cyclic flexing: 500 cycles at $25^\circ\text{C} \pm 2^\circ\text{C}$ and 100 cycles at $-28^\circ\text{C} \pm 2^\circ\text{C}$. Change in optical transmittance measurements are to be made every 100 cycles for the 500 cycle exposure and every 25 cycles for the 100 cycle exposure. Each change in optical transmittance measurement shall be performed with the test specimen in the same position in the test cycle. The cycling may be halted to perform the change in optical transmittance measurement.

Crush: The test load shall be 250 N at a rate of 250 N/min.

Cable twist bending: 500 cycles at $25^\circ\text{C} \pm 2^\circ\text{C}$ and 100 cycles at $-28^\circ\text{C} \pm 2^\circ\text{C}$. The test load shall be 10 N. Change in optical transmittance measurements are to be made every 100 cycles for the 500 cycle exposure and every 25 cycles for the 100 cycle exposure. Each change in optical transmittance measurement shall be performed with the test specimen in the same position in the test cycle. The cycling may be halted to perform the change in optical transmittance measurement.

Radial compression: Not applicable.

Impact: Not applicable.

Hosing: Not applicable.

Dripping: Not applicable.

Environmental properties:

Temperature range:

Operating: -28°C to 65°C.

Nonoperating: -40°C to 70°C.

Storage: -40°C to 70°C.

Temperature cycling: Change in optical transmittance measurements may be made periodically. At a minimum, one optical transmittance measurement shall be made over a period of 1 hour at the end of each temperature plateau.

Temperature humidity cycling: Change in optical transmittance measurements may be made periodically. At a minimum, one optical transmittance measurement shall be made at the end of each temperature plateau.

Storage temperature: Applicable.

Weathering: Not applicable.

Fluid immersion: Not applicable.

Flame extinguishing: Not applicable.

Smoke generation and flame propagation: Not applicable.

Flaming smoke generation: $D_m \leq 225$ when tested in the flaming condition in accordance with ASTM-E-662. The size and configuration of the test specimen shall conform to the 76 mm (3 inch) by 76 mm (3 inch) square specified in ASTM-E-662. The thickness of the test specimen shall be 2 mm (.08 inch). The specimen shall be constructed by laying 3 inch lengths of OFCC adjacent to one another to form a 76 mm (3 inch) strip. Wire or cable clamps may be used to permanently hold the OFCC lengths in place. Longer OFCC lengths may be used if the top or bottom clamps are used to hold the OFCCs. If top or bottom clamps are used, the length of OFCC exposed outside of the clamp(s) shall be 76 mm (3 inches).

Shock: Not applicable.

Paint susceptibility: Not applicable.

Electromagnetic effects: Not applicable.

Chemical properties:

Halogen content: < 0.2 percent.

Part or Identifying Number (PIN):

M85045/16-01 (Multimode).

M85045/16-02 (Single-mode).

MIL-PRF-85045/16B

Qualification by similarity:

Manufacturers who produce products for MIL-PRF-85045/13, MIL-PRF-85045/15, MIL-PRF-5045/17, or MIL-PRF-85045/18 and this specification sheet and are qualified under MIL-PRF-85045/13, MIL-PRF-85045/15, MIL-PRF-85045/17, or MIL-PRF-85045/18 and pass the attenuation rate, cold bend, flaming smoke generation, kink, and size inspection specified herein, are qualified under this specification sheet. Testing may be performed on a single length of cable, with a minimum length of 0.5 km.

Intended use:

This cable is intended for use as jumper cordage and pigtails for fiber optic components. This cable is intended for use inside of protected enclosures and is not intended for installation in the overheads or cableways.

Custodians:

Army - CR
Navy - SH
Air Force - 11
NASA - NA

Preparing activity:

Navy - SH

Agent:

DLA - CC

Review activities:

Army - AR, AV, MI
Navy - EC, YD
Air Force - 02, 19, 80, 99
DLA - CC

(Project 6015-0034-04)